

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. When strikethrough cannot easily be perceived, or when five or fewer characters are deleted, [[double brackets]] are used to show the deletion. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered). Please AMEND claims 15 and 28 and CANCEL claims 38-54 without prejudice or disclaimer in accordance with the following:

1. (original) An active material for a battery having a surface-treatment layer, comprising a compound of the formula (1):



wherein M is at least one element selected from the group consisting of an alkali metal, an alkaline earth metal, a group 13 element, a group 14 element, a transition metal, and a rare-earth element,

X is an element that is capable of forming a double bond with oxygen, and

k is a numerical value in the range of 2 to 4.

2. (original) The active material of claim 1, wherein the element M is selected from the group consisting of Na, K, Mg, Ca, Sr, Ni, Co, Si, Ti, B, Al, Sn, Mn, Cr, Fe, V, Zr, and a combination thereof.

3. (original) The active material of claim 1, wherein the element X is selected from the group consisting of P, S, W, and a combination thereof.

4. (original) The active material of claim 1, wherein an amount of the element M is 0.1 to 15 % by weight of the active material.

5. (original) The active material of claim 1, wherein an amount of the element M is 0.1 to 6% by weight of the active material.

6. (original) The active material of claim 1, wherein an amount of the element X is 0.1 to 15 % by weight of the active material.

7. (original) The active material of claim 1, wherein an amount of the element X is 0.1 to 6% by weight of the active material.

8. (original) The active material of claim 1, wherein a thickness of the surface-treatment layer is 0.01 to 2 μm .

9. (original) The active material of claim 1, wherein a tap density of the active material is 1 to 3 g/cc.

10. (original) The active material of claim 1, wherein the active material is an electrochemically reversibly oxidizable and reducible material.

11. (original) The active material of claim 10, wherein the electrochemically oxidizable and reducible material is selected from the group consisting of a metal, a lithium-containing alloy, a sulfur-based compound, a compound that can reversibly form a lithium-containing compound by a reaction with lithium ions, and a material that can reversibly intercalate/deintercalate lithium ions.

12. (original) The active material of claim 11, wherein the material that can reversibly intercalate/deintercalate lithium ions is one of lithium-containing metal oxide, a lithium containing chalcogenide compound, and a carbon-based material.

13. (original) The active material as recited in claim 1, wherein the active material is used in at least one of a positive electrode and a negative electrode of the battery.

14. (original) The active material as recited in claim 1, wherein the battery is one of a manganese battery, an alkaline battery, a mercury battery, a silver oxide battery, a lead-acid storage battery, a nickel metal hydride battery, a nickel-cadmium battery, a lithium metal battery, a lithium ion battery, a lithium polymer battery and a lithium-sulfur battery.

15. (currently amended) ~~An~~ The active material of claim 1, for a battery,
~~comprising wherein the active material comprises:~~

a lithiated intercalation compound selected from the group consisting of a lithium-containing metal oxide and a lithium-containing chalcogenide compound, ~~and~~

~~a wherein the~~ surface-treatment layer is formed on a surface of the lithiated intercalation compound and has a solid-solution compound including surface treating elements M and X, and a compound of the formula (1):



~~wherein M is at least one element selected from the group consisting of an alkali metal, an alkaline earth metal, a group 13 element, a group 14 element, a transition metal, and a rare earth element,~~

~~X is an element which is capable of forming a double bond with oxygen, and~~

~~k is a numerical value in the range of 2 to 4.~~

16. (original) The active material of claim 15, wherein the element M is selected from the group consisting of Na, K, Mg, Ca, Sr, Ni, Co, Si, Ti, B, Al, Sn, Mn, Cr, Fe, V, Zr, and a combination thereof.

17. (original) The active material of claim 15, wherein the element X is selected from the group consisting of P, S, W, and a combination thereof.

18. (original) The active material of claim 15, wherein an amount of the element M is 0.1 to 15% by weight of the active material.

19. (original) The active material of claim 15, wherein an amount of the element M is 0.1 to 6% by weight of the active material.

20. (original) The active material of claim 15, wherein an amount of the element X is 0.1 to 15 % by weight of the active material.

21. (original) The active material of claim 15, wherein an amount of the element X is 0.1 to 6% by weight of the active material.

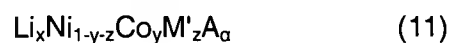
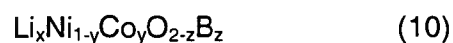
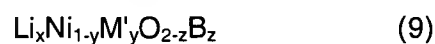
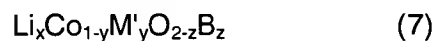
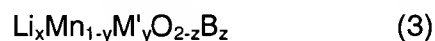
22. (original) The active material of claim 15, wherein a thickness of the surface-treatment layer is 0.01 to 2 μm .

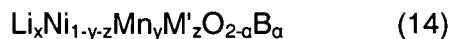
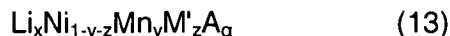
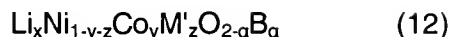
23. (original) The active material of claim 15, wherein a tap density of the active material is 1 to 3 g/cc.

24. (original) The active material of claim 15, wherein a concentration of the elements M and X decreases gradually from a surface to a center of a particle grain of the active material.

25. (original) The active material of claim 15, wherein the lithiated intercalation compound has one of a monoclinic, hexagonal and a cubic structure as a basic structure.

26. The active material of claim 15, wherein the lithiated intercalation compound is at least one selected from the group consisting of a lithium compound with the following formulas (2) to (14):





wherein $0.95 \leq x \leq 1.1$, $0 \leq y \leq 0.5$, $0 \leq z \leq 0.5$, and $0 < \alpha \leq 2$;

M' is at least one element selected from the group consisting of Al, Ni, Co, Mn, Cr, Fe, Mg, Sr, V, and a rare-earth element;

A is at least one element selected from the group consisting of O, F, S and P; and

B is at least one element selected from the group consisting of F, S and P.

27. (original) The active material of claim 26, wherein an average particle size of the lithiated intercalation compound is 1 to 20 μm .

28. (currently amended) ~~An~~ The active material of claim 1, for a battery,
~~comprising:~~ wherein the active material is utilized in a battery, the active material comprising:
 a lithiated intercalation compound selected from the group consisting of a lithium-containing metal oxide and a lithium-containing chalcogenide compound; ~~and~~
a wherein the surface-treatment layer is formed on a surface of the lithiated intercalation compound and has a solid-solution compound including Al and P, and an AlPO_k (k is 2 to 4) compound.

29. (original) The active material of claim 28, wherein an amount of the element Al is 0.1 to 15 % by weight of the active material.

30. (original) The active material of claim 28, wherein an amount of the element Al is 0.1 to 6% by weight of the active material.

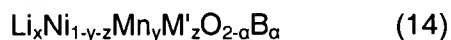
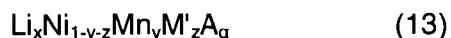
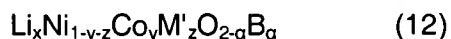
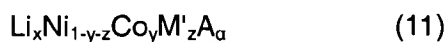
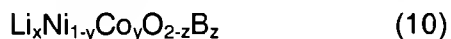
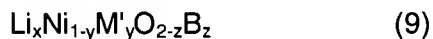
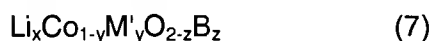
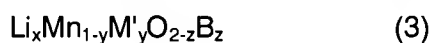
31. (original) The active material of claim 28, wherein an amount of the element P is 0.1 to 15 % by weight of the active material.

32. (original) The active material of claim 28, wherein an amount of the element P is 0.1 to 6% by weight of the active material.

33. (original) The active material of claim 28, wherein a concentration of the elements M and X decreases gradually from a surface to a center of a particle grain of the active material.

34. (original) The active material of claim 28, wherein the lithiated intercalation compound has one of a monoclinic, hexagonal and a cubic structure as a basic structure.

35. (original) The active material of claim 28, wherein the lithiated intercalation compound is at least one selected from the group consisting of a lithium compound with the following formulas (2) to (14):



wherein $0.95 \leq x \leq 1.1$, $0 \leq y \leq 0.5$, $0 \leq z \leq 0.5$, and $0 < \alpha \leq 2$;

M' is at least one element selected from the group consisting of Al, Ni, Co, Mn, Cr, Fe, Mg, Sr, V, and a rare-earth element;

A is at least one element selected from the group consisting of O, F, S and P; and

B is at least one element selected from the group consisting of F, S and P.

36. (original) The active material of claim 35, wherein an average particle size of the lithiated intercalation compound is 1 to 20 μm .

37. (original) The active material of claim 28, wherein a tap density of the active material is 1 to 3 g/cc.

38. (cancelled)

39. (cancelled)

40. (cancelled)

41. (cancelled)

42. (cancelled)

43. (cancelled)

44. (cancelled)

45. (cancelled)

46. (cancelled)

47. (cancelled)

Serial No.: 09/995,868

Docket No. 1567.1017

48. (cancelled)

49. (cancelled)

50. (cancelled)

51. (cancelled)

52. (cancelled)

53. (cancelled)

54. (cancelled)